



M10988. Reports Human tumor necro...[gi:339737]

Links

LOCUS HUMTNFAA 1585 bp mRNA linear PRI 14-JAN-1995  
DEFINITION Human tumor necrosis factor (TNF) mRNA.  
ACCESSION M10988  
VERSION M10988.1 GI:339737  
KEYWORDS .  
SOURCE Homo sapiens (human)  
ORGANISM Homo sapiens  
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.  
REFERENCE 1 (bases 1 to 1585)  
AUTHORS Wang, A. M., Creasey, A. A., Ladner, M. B., Lin, L. S., Strickler, J., Van  
Arsdell, J. N., Yamamoto, R. and Mark, D. F.  
TITLE Molecular cloning of the complementary DNA for human tumor necrosis  
factor  
JOURNAL Science 228 (4696), 149-154 (1985)  
MEDLINE 85142190  
PUBMED 3856324  
COMMENT Original source text: Human cDNA to mRNA, clone pE4.

FEATURES Location/Qualifiers  
source 1..1585  
/organism="Homo sapiens"  
/mol\_type="mRNA"  
/db\_xref="taxon:9606"  
/map="6p21.3"  
gene 1..1585  
/gene="TNFA"  
CDS 86..787  
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VSYQTKVNLLSAIKSPCQRETPEGAEAKPWYEPILGGVFQLEKGDRLSAEINRPDYL  
DFAESGQVYFGIIAL"

ORIGIN Chromosome 6p21.3.

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121 ggccgaggag gcgctcccca agaagacagg ggggccccag ggctccaggc ggtgcttggt
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421 cctggccaat ggcggtggagc tgagagataa ccagctggtg gtgccatcag agggcctgta  
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1561 gaaataaagg ttgcttagga aagaa

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BLink,  
Domains,  
Links

1: Q8HZD9. Reports Tumor necrosis fa...[gi:31077029]

LOCUS Q8HZD9 232 aa linear PRI 15-JUN-2004

DEFINITION Tumor necrosis factor precursor (TNF-alpha) (Tumor necrosis factor ligand superfamily member 2) (TNF-a) (Cachectin).

ACCESSION Q8HZD9

VERSION Q8HZD9 GI:31077029

DBSOURCE swissprot: locus TNFA\_PANTR, accession Q8HZD9;  
class: standard.  
created: Oct 10, 2003.  
sequence updated: Oct 10, 2003.  
annotation updated: Jun 15, 2004.  
xrefs: gi: 18181946, gi: 18181948, gi: 32127763, gi: 32127765, gi: 23379678, gi: 23379679  
xrefs (non-sequence databases): HSSPP01375, InterProIPR006053, InterProIPR006052, InterProIPR008983, InterProIPR003636, PfamPF00229, PRINTSPR01234, ProDomPD002012, PROSITEPS00251, PROSITEPS50049

KEYWORDS Cytokine; Transmembrane; Signal-anchor; Phosphorylation.

SOURCE Pan troglodytes (chimpanzee)

ORGANISM Pan troglodytes  
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Pan.

REFERENCE 1 (residues 1 to 232)

AUTHORS Kulski, J.K., Shiina, T., Anzai, T., Kohara, S. and Inoko, H.

TITLE Comparative genomic analysis of the MHC: the evolution of class I duplication blocks, diversity and complexity from shark to man

JOURNAL Immunol. Rev. 190, 95-122 (2002)

MEDLINE 22381002

PUBMED 12493009

REMARK SEQUENCE FROM N. A.

REFERENCE 2 (residues 1 to 232)

AUTHORS Anzai, T., Shiina, T., Kimura, N., Yanagiya, K., Kohara, S., Shigenari, A., Yamagata, T., Kulski, J.K., Naruse, T.K., Fujimori, Y., Fukuzumi, Y., Yamazaki, M., Tashiro, H., Iwamoto, C., Umehara, Y., Imanishi, T., Meyer, A., Ikeo, K., Gojobori, T., Bahram, S. and Inoko, H.

TITLE Comparative sequencing of human and chimpanzee MHC class I regions unveils insertions/deletions as the major path to genomic divergence

JOURNAL Proc. Natl. Acad. Sci. U.S.A. 100 (13), 7708-7713 (2003)

MEDLINE 22709134

PUBMED 12799463

REMARK SEQUENCE FROM N. A.

REFERENCE 3 (residues 1 to 232)  
AUTHORS O'Huigin, C., Tichy, H. and Klein, J.  
TITLE Direct Submission  
JOURNAL Submitted (??-MAR-2002)  
REMARK SEQUENCE OF 33-186 FROM N. A.

COMMENT

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This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. The original entry is available from <http://www.expasy.ch/sprot> and <http://www.ebi.ac.uk/sprot>  
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[FUNCTION] Cytokine that binds to TNFRSF1A/TNFR1 and TNFRSF1B/TNFR2. It is mainly secreted by macrophages and can induce cell death of certain tumor cell lines. It is potent pyrogen causing fever by direct action or by stimulation of interleukin 1 secretion and is implicated in the induction of cachexia. Under certain conditions it can stimulate cell proliferation and induce cell differentiation (By similarity).

[SUBUNIT] Homotrimer (By similarity).

[SUBCELLULAR LOCATION] Type II membrane protein. Also exists as an extracellular soluble form (By similarity).

[PTM] The soluble form derives from the membrane form by proteolytic processing (By similarity).

[PTM] The membrane form, but not the soluble form, is phosphorylated on serine residues. Dephosphorylation of the membrane form occurs by binding to soluble TNFRSF1A/TNFR1 (By similarity).

[SIMILARITY] Belongs to the tumor necrosis factor family.

FEATURES

Location/Qualifiers

source

1..232  
/organism="Pan troglodytes"  
/db\_xref="taxon:9598"

gene

1..232  
/gene="TNF"  
/note="synonyms: TNFSF2, TNFA"

Protein

1..232  
/gene="TNF"  
/product="Tumor necrosis factor precursor"

Region

1..232  
/gene="TNF"  
/region\_name="Mature chain"  
/note="Tumor necrosis factor, membrane form (By similarity)."

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               /region_name="Domain"
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               /note="Phosphoserine (by CK1) (By similarity). "
               /evidence=experimental
Region      35..57
               /gene="TNF"
               /region_name="Transmembrane region"
               /note="Signal-anchor for type II membrane protein (By
               similarity). "
               /evidence=experimental
Region      58..232
               /gene="TNF"
               /region_name="Domain"
               /note="Extracellular (Potential). "
               /evidence=experimental
Site        76..77
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               /site_type="cleavage"
               /note="Cleavage (by ADAM17) (By similarity). "
               /evidence=experimental
Region      77..232
               /gene="TNF"
               /region_name="Mature chain"
               /note="Tumor necrosis factor, soluble form (By
               similarity). "
               /evidence=experimental
Region      77
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Bond        bond(144,176)
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               /bond_type="disulfide"
               /note="By similarity. "
               /evidence=experimental

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ORIGIN

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12l nqlvvpsegl yliysqvlfk gqgcpsthvl lthtisriav syqtkvnlls aikspcqret  
18l pegaeakpwy epiylggvfq lekgdrilsae inrpdyldfa esgvyfgii al

1: X02910. Reports Human gene for tu... [gi:37209] Links

LOCUS HSTNFA 3634 bp DNA linear PRI 17-FEB-1997

DEFINITION Human gene for tumor necrosis factor (TNF-alpha).

ACCESSION X02910 X02159

VERSION X02910.1 GI:37209

KEYWORDS signal peptide; tumor necrosis factor.

SOURCE Homo sapiens (human)

ORGANISM Homo sapiens  
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1

AUTHORS Pennica, D., Nedwin, G. E., Hayflick, J. S., Seeburg, P. H., Derynck, R.,  
Palladino, M. A., Kohr, W. J., Aggarwal, B. B. and Goeddel, D. V.

TITLE Human tumour necrosis factor: precursor structure, expression and  
homology to lymphotoxin

JOURNAL Nature 312 (5996), 724-729 (1984)

MEDLINE 85086244

PUBMED 6392892

REFERENCE 2 (bases 329 to 3634)

AUTHORS Shirai, T., Yamaguchi, H., Ito, H., Todd, C. W. and Wallace, R. B.

TITLE Cloning and expression in Escherichia coli of the gene for human  
tumour necrosis factor

JOURNAL Nature 313 (6005), 803-806 (1985)

MEDLINE 85137898

PUBMED 3883195

REFERENCE 3 (bases 1 to 3634)

AUTHORS Nedwin, G. E., Naylor, S. L., Sakaguchi, A. Y., Smith, D.,  
Jarrett-Nedwin, J., Pennica, D., Goeddel, D. V. and Gray, P. W.

TITLE Human lymphotoxin and tumor necrosis factor genes: structure,  
homology and chromosomal localization

JOURNAL Nucleic Acids Res. 13 (17), 6361-6373 (1985)

MEDLINE 86016093

PUBMED 2995927

COMMENT In the cDNA sequence from ref [3] the mature protein site starts  
also with Val at pos 1631  
Data kindly reviewed (18-FEB-1986) by A. Sakaguchi.

FEATURES Location/Qualifiers

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TATA\_signal 590..595

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misc feature 1824..1869  
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intron 1870..2170  
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exon 2171..3381  
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misc feature 2171..2589  
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# ORIGIN

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3601 ctgagggcat gggaatttcc aactctggga attc

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### **Molecular cloning of the complementary DNA for human tumor necrosis factor.**

**Wang AM, Creasey AA, Ladner MB, Lin LS, Strickler J, Van Arsdel JN, Yamamoto R, Mark DF.**

Tumor necrosis factor (TNF) is a soluble protein that causes damage to tumor cells but has no effect on normal cells. Human TNF was purified to apparent homogeneity as a 17.3-kilodalton protein from HL-60 leukemia cells and showed cytotoxic and cytostatic activities against various human tumor cell lines. The amino acid sequence was determined for the amino terminal end of the purified protein, and oligodeoxyribonucleotide probes were synthesized on the basis of this sequence. Complementary DNA (cDNA) encoding human TNF was cloned from induced HL-60 messenger RNA and was confirmed by hybrid-selection assay, direct expression in COS-7 cells, and nucleotide sequence analysis. The human TNF cDNA is 1585 base pairs in length and encodes a protein of 233 amino acids. The mature protein begins at residue 77, leaving a long leader sequence of 76 amino acids. Expression of high levels of human TNF in *Escherichia coli* was accomplished under control of the bacteriophage lambda PL promoter and gene N ribosome binding site.